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ABSTRACT

Although the role of humor in relaxation and interpersonal relationships is well documented, its role in increasing performance in the classroom has not been systematically studied. To investigate the effect of appropriately timed humor on performance of a stressful task, 40 college students performed a mathematics test under one of four experimental conditions (high or moderate stress; presence or absence of humor). The procedure entailed a pretest administration of the stressor (the Quiz Electrocardiogram) combined with the dependent measure, a 7-minute break during which the humor/no humor condition was implemented, and a post-break readministration of the stressor with the dependent measure. An analysis of the results showed that humor did not significantly reduce ratings of complexity, time constraint, or ego involvement in high or low stress conditions. However, both the main effect for humor and the humor by stress interactions were statistically significant, indicating that humor improved the level of subsequent task performance. These findings confirm the effectiveness of humor on task performance; however, the underlying mechanisms of that interaction need further clarification. (BL)

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IMPROVING PERFORMANCE THROUGH THE USE OF HUMOR

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Improving Performance Through the Use of Humor

The importance of humor in relieving tension (Freud, 1960; Bradney, 1957), facilitating healthy interpersonal relationships (Coser, 1959, 1960), and reinforcing attentiveness to a message (Fink & Walker, 1977) has long been recognized. However, there is little evidence that humor during lectures (Weinburg, 1973; Kaplan & Pascoe, 1977) and incorporated within classroom tests (Townsend & Mahoney, 1981; Deffenbacher, Deitz, and Hazelens, 1981) reduces the students' state anxiety or increases their test performance.

Nevertheless, since humor is presumed to enhance relaxation, Malone (1980) suggests that it can be used as a management tool for improving subordinate performance and the quality of supervisor-subordinate relationships. But since the nature and effects of humor have not been systematically examined in work groups or simulations (Duncan, 1982), arguments favoring its use as a management tool do not specify the circumstances in which humor might legitimately be expected to improve task performance.

For example, the timing of the humor relative to task performance may be crucial in determining its appropriateness, and hence its effect. From his observation of employee behavior in a printing company, Sykes (1966) noted that spontaneous humor occurs more frequently during breaks than during actual task performance. This observation suggests that the use of humor as a management tool might be timed more appropriately by introducing humorous stimuli while employees are relaxing between work sessions rather than while they are actually performing the task. This

paper reports an attempt to demonstrate that appropriately timed humor effectively improves performance of a stressful task.

Method

Problem and Design Overview

The typical shape of the relationship between stress level and task performance is an inverted-U (Cofer & Appley, 1964); Intermediate levels of stress are optimal for performance. Since humor is presumed to reduce stress to optimal levels, we hypothesized that its effect would be more evident for subjects experiencing high stress than for those experiencing moderate stress.

The experiment employed a randomized 2 X 2 factorial design. The two independent dichotomized variables were: (1) stress level (high or moderate); (2) humor (present or absent). The dependent variable was subjects' scores on a twenty-item mathematics test comprised of items determined in a pilot study to be of moderate (i.e., about .5) difficulty. In overview, the procedure sequentially entailed (a) a pretest administration of the stressor combined with the dependent measure, (b) a seven-minute break during which the humor/no humor condition was implemented, (c) post-break readministration of the stressor with the dependent measure.

Subjects

The subjects were forty undergraduate psychology student volunteers randomly assigned to one of the four experimental conditions (10 per cell).

Procedure

Implementing the Stress Conditions. Three generally accepted dimensions of stressful tasks are complexity, time constraint, and ego involvement (Weitz, 1970; Sharit & Salvendy, 1982). The Quiz Electrocardiogram (Schiffer et al, 1976), an experimental stressor which manipulates these three task dimensions, consists of 35 recorded questions, resembling intelligence quotient test questions. The questions increase in complexity during the recording. In addition, the response time for each question is seven seconds long followed by a recorded statement of the correct answer. Ego involvement is induced by telling subjects that the test is a measure of their ability to learn and use information. The validity of the instrument as a stressor is confirmed by evidence that its administration is accompanied by statistically significant increases in heart rate and in both systolic and diastolic blood pressure (Schiffer et al, 1976; Cohen et al, 1983).

Two modifications in administering the Quiz Electrocardiogram were required in order to accommodate the requirements of our design. First, because our design required two administrations of the Quiz Electrocardiogram, the usual procedure was modified by administering the instrument to all subjects without providing the correct answers. The high stress condition was operationally defined by administration of the Quiz Electrocardiogram, thus modified, but with the usual instructions (describing it as an intelligence test) and the seven-second interval between questions.

A second set of modifications was made to operationally define the

moderate stress condition. Subjects in this condition wer told that the study sought to determine the difficulty of the Quiz Electrocardiogram questions (rather than describing it as an intelligence test), and the time constraint was lifted from seven to fourteen seconds between questions. Complexity of the items was not manipulated; That is, the same items were used for both stress conditions.

Implementing the Humor Condition. Subjects were told to wait during a break between the pretest and posttest, while the experimenter prepared the second part of the experiment. Those in the non-humor condition were asked to sit quietly and read a new magazine during the seven-minute break. The magazine contained no humorous material. Those subjects in the humor condition listened to a seven-minute commercially produced tape of a humorous monologue selected for its relevance to school work. The particular monologue used was chosen as the most humorous of four rated by fifteen subjects in a pilot study using a 5-point, Likert-type scale ($X = 3.1$, moderately humorous).

Dependent Variables. The mathematics problems (task performance measure) were administered twice; (1) interspersed within the pretest Quiz Electrocardiogram; and (2) within the posttest Quiz Electrocardiogram. The pretest administration served two purposes: (1) The pretest scores, which were obtained prior to the humor manipulation, were used as the covariate for analyzing the posttest humor manipulation scores. (2) The pretest scores themselves provided a manipulation check on the level of stress induced under the two conditions. Mathematics

performance was expected to be superior under the moderate than under the high stress condition.

As a further check on the stress manipulation, all subjects conpleted a brief questionnaire (5-point, Likert-type) wherein they were asked to rate their personal involvement in the task, feelings of time constraint, and perceived task complexity. Subjects in the humor condition answered an additional question concerning humor appreciation.

Results

Manipulation Checks

Compared with subjects in the "moderate stress" condition, those in the "high stress" condition did not perceive the task either as significantly more complex ($t(38) = .88$) or as more constrained for time ($t(38) = .48$). However, ego involvement ratings for the two conditions were significantly different in the expected direction ($t(38) = 2.86$; p .01). Therefore, the perceptual measures indicated that the stress conditions only differed in the degree of ego involvement induced.

Mathematics performance data provided further support for the effectiveness of the stress manipulation. As predicted by the inverted-U shaped curve, the mean pretest score of subjects under "moderate" stress was significantly higher than that of subjects under "high stress" ($t(38) = 2.11$; p .05).

Effect of Humor

Humor did not significantly reduce ratings of complexity, time constraint, or ego involvement in high or low stress conditions. Ego

involvement ratings were significantly higher in the humor-high stress condition than in the humor-moderate stress condition ($t(18) = 1.82$; p .05), but not in the no humor-high stress condition ($t(18) = -.85$); However, significant performance differences did occur.

The means for each group and the analysis of covariance pertinent to the hypothesized effects of humor on performance are summarized in Tables 1 and 2, respectively. Both the main effect for humor ($F(1,35) = 13.03$; p .001) and the humor X stress interaction ($F(1,35) = 6.25$: p .02) were statistically significant in the hypothesized direction.

Insert Tables 1 & 2 About Here

Discussion

The results of this laboratory study indicate that humor during a break in a stressful task improves the level of subsequent task performance. Note that our design differed in one important respect from the design of the previously cited classroom studies which failed to find a similar beneficial effect of humor on performance. Rather than confound task performance with humor, as was done in those studies, we presented humor during a break as a relief from task performance. It seems plausible that employing humor during an evaluative task (e.g., attending to a lecture or taking a test) is likely to be perceived by the subjects as particularly inappropriate.

Although the results confirm that humor is even more effective in

improving performance under high than under moderate stress conditions, the findings do not clarify the underlying mechanisms. Humor may operate by reducing subjective feelings of tension; Howeve:, if this is what occurred, the subjects seemed from their self-reports to be unaware of the fact. Alternatively, the humor may ahve acted as a reinforcer for attentiveness (Fink & Walker, 1977), leading to the significant main effect shown in Table 2. Similarly, the significant humor X stress interaction might have resulted from the joint effect of humor as a reinforcer and ego involvement as a motivator.

Although the operating mechanism is not yet clear, it now seems appropriate to attempt a replication of this laboratory study in a stressful work setting.

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Table 1

Mathematics Performance
Means and Standard Deviations

	Pretest		Posttest	
	$\bar{X}$	SD	$\bar{X}$	SD
Humor				
High Stress	9.7	2.95	14.8	3.05
Moderate Stress	13.3	4.30	15.5	4.43
No Humor				
High Stress	11.8	3.74	12.8	3.33
Moderate Stress	13.4	4.55	14.9	4.08

TABLE 2

Analysis of Covariance

Source	df	MS	F
Humor.	1	47.78	13.03
Stress	1	5.01	1.37
Humor X Stress	1	22.90	6.25
Covariate	1	380.27	(b=0.83)
Error.	35	3.67	---
Homogenity of Regressions. . . .	32	---	1.03

*p < .02

**p < .001